SUMMARY AND CONCLUSION
Plant tissue culture has the potential to introduce genetic variability in aromatic and medicinal plants through somaclonal variants, somatic hybrids or transgenic plants, and it is a known fact that these plants can be improved through tissue culture techniques. As a pre-requisite for these techniques the development of a suitable and reproducible plant regeneration system is must. For transformation of most monocotyledonous plants is the establishment of *in vitro* culture systems from which plants can be regenerated with high efficiency. Hence, for the present study the three major aromatic grasses has been selected and protocols has been standardized for high efficient regeneration system in the three plants.

The significant results of the present study are as follows: -

(1) *Cymbopogon flexuosus*

- Out of the various explants tried for callus initiation viz.- young leaves, seedlings, basal portion of the stem parts and culms, seedlings were found to be good for initiation of callus.
- MS medium supplemented with 1 mg/l 2,4-D and 0.1 mg/l KN was found to be suitable for callus induction from mesocotyl parts of the seedling explants.
- MS medium supplemented with 1 mg/l BA gave rise to multiple shoots.
- MS medium at half strength or MS basal medium devoid of any auxins gave rise to roots.
Summary & Conclusion

- Essential oils from in vivo and in vitro raised plants were hydrodistilled using Clevenger's apparatus and thin layer chromatography of these oils was carried out for comparison. It is found that in vitro derived oil samples contained new components as identified from the TLC spots. Further analysis of the oil samples in GC confirmed that there are new terpenoid derivatives in the oil extracted from in vitro raised plants

(2) Cymbopogon citratus.

- Out of the various explants tried for callus initiation viz.-young leaves, immature inflorescences, basal portion of the stem parts and culms, immature inflorescence were found to be good for callus induction in C. citratus.
- MS medium supplemented with 1 mg/l 2,4-D and 1 mg/l BA gave rise to callus
- MS medium supplemented with 1 mg/l KN gave rise to multiple shoots
- Shoots readily developed roots on MS medium with 0.2 mg/l IBA or NAA
- A somaclonal variant having marked phenotypical variation in leaf morphology was isolated and studied.
Summary & Conclusion

(3) *Vetiveria zizanioides.*

- Out of the various explants tried for callus initiation viz.: young leaves, seedlings, basal portion of the stem parts and culms, seedlings were found to be good for initiation of callus.

- MS medium supplemented with 1 mg/l 2,4-D and 1 mg/l KN gave rise to nodular pale yellow callus from mesocotyl explants.

- Callus was maintained on the above medium with 100 ppm. each CH and PVP. These additives were found to be helpful in retaining the morphogenetic potential of the callus for more than 8 subcultures. (each subculture every 35-40 days)

- Callus gave rise to multiple shoots on MS medium with 1 mg/l BA. Shoots gave rise to roots on MS medium supplemented with 0.05 mg/l NAA. or with MS + 0.5 mg/l riboflavin.

- Callus subjected to physical mutagens such as UV rays showed that except for a delay in the onset of shoot morphogenesis, other significant variations were not induced.

These well-established protocols could prove to be useful for further *in vitro* genetic manipulations in these three important major aromatic plants.